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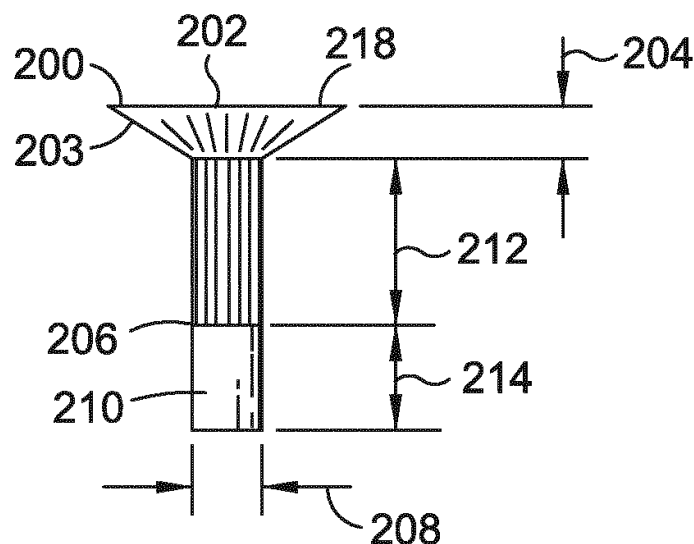
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(54) **Method for preparing highly-deformable titanium and titanium-alloy one-piece fasteners and fasteners prepared thereby**

(57) A fastener has a cold-worked head section (204), a cold-worked shank section (212), and a ductile shank section (214) extending from the cold-worked shank section (212) to a tail end portion (210) of the fastener.



**FIG. 1**



## EUROPEAN SEARCH REPORT

Application Number  
EP 12 19 2230

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                     |                                                                                                                                                    |                                                                                                                                                                                                                                                                                       |                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Category                                                                                                                                                                                                                | Citation of document with indication, where appropriate, of relevant passages                                                                      | Relevant to claim                                                                                                                                                                                                                                                                     | CLASSIFICATION OF THE APPLICATION (IPC)    |
| X                                                                                                                                                                                                                       | US 2006/177284 A1 (KEENER STEVEN G [US] ET AL) 10 August 2006 (2006-08-10)<br>* paragraphs [0016], [0017], [0022] - [0028]; figures 1-4 *<br>----- | 1-15                                                                                                                                                                                                                                                                                  | INV.<br>B21J15/02<br>B21K1/58<br>F16B19/06 |
|                                                                                                                                                                                                                         |                                                                                                                                                    |                                                                                                                                                                                                                                                                                       | TECHNICAL FIELDS SEARCHED (IPC)            |
|                                                                                                                                                                                                                         |                                                                                                                                                    |                                                                                                                                                                                                                                                                                       | B21J<br>B21K<br>F16B                       |
| The present search report has been drawn up for all claims                                                                                                                                                              |                                                                                                                                                    |                                                                                                                                                                                                                                                                                       |                                            |
| Place of search<br>Munich                                                                                                                                                                                               |                                                                                                                                                    | Date of completion of the search<br>9 June 2015                                                                                                                                                                                                                                       | Examiner<br>Augé, Marc                     |
| CATEGORY OF CITED DOCUMENTS                                                                                                                                                                                             |                                                                                                                                                    |                                                                                                                                                                                                                                                                                       |                                            |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                                    | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                            |

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82